



BOROUGH OF BEDFORD.

REPORTS

OF THE

MEDICAL OFFICER OF HEALTH

AND

SCHOOL MEDICAL OFFICER

AND OF THE

SANITARY INSPECTOR

FOR THE YEAR 1909.





BOROUGH OF BEDFORD.



REPORT

OF THE

MEDICAL OFFICER OF HEALTH

WITH

TABLES OF MORTALITY

FOR THE YEAR 1909.



To the Bedford Urban Sanitary Authority.

GENTLEMEN,

I have the honour to submit to you my Annual Report for the year 1909.

Having last year, in accordance with the requirements of the Local Government Board, reported at considerable length on the character and general features of Bedford, considered from the point of view of Public Health, it seems unnecessary to repeat my remarks after so short an interval of time.

HOUSE ACCOMMODATION.

In last years' Report, I gave a list of "back-to-back" houses, and houses having imperfect through ventilation, with the added remark "that though it would be impossible to say they are unfit for human habitation, it would be a good thing if they could be got rid of."

This list was as follows:—

Butcher's yard: 6 houses.

Bell Court: 12 houses.

Tavistock Place: 12 houses (4. "back to back").

Hand Court: 13 houses.

Spring Gardens: 8 houses.

Chandos Street: 4 "back to back."

Christie's Court: 10 houses.

Allhallow's Lane: 2 "back to back."

Castle Hill: 2 "back to back."

Graham's Yard: 5 houses.

I further recommended that, if possible, steps should be taken to acquire the 5 houses in Graham's Yard. All these houses have been kept under my observation during the year. Owing to the requirements of your Authority the houses in Graham's yard became such a burden to their owner, that they have been sold to a business firm adjoining to be utilised for business purposes. The houses are to be vacated shortly. The owner of Christie's Court, for similar reasons, has given notice of his intention to close the houses in Christie's Court to human habitation. They will be vacated in March.

This class of property is tending, no doubt, to become increasingly burdensome, and it should never be forgotten by the owners that a very little will often determine the difference between a house that can be considered "fit for habitation" and one that cannot. But though such property is held at the owner's risk, it is only fair to add that the blame ought often to attach, not to the landlord, but to the tenant. In such a town as Bedford there are no large, continuous slum districts; but worthless, dirty, and dissolute people will make what may be termed "slum houses," in quite respectable streets, and it is from steady pressure applied to such persons that most is to be gained. People who keep their children under such conditions are liable to

prosecution, under Section 12 of the Children Act, 1908. One such prosecution during the past year resulted in the conviction of the offender, and a sentence of three months' hard labour. In this case the house was in a filthy state, and evidence on the point was admitted, as well as evidence as to the neglected state of the children.

From time to time I have made house-to-house inspections with the Sanitary Inspector, in different quarters of the town. As a result I certified 23 houses as unfit for human habitation at the time of inspection. Seven of them have been thoroughly renovated and made habitable. The remainder will be closed, as stated above. In 148 cases I certified, under Sect. 46 of the Public Health Act, 1875, for internal cleansing to a greater or less extent. Special attention has been paid to the paving of the backyards. A great improvement has been effected in this matter of late. It is probable that some of the smaller streets will shortly be paved with asphalt; this will be better for the health of the children who live in them.

REMOVAL AND DISPOSAL OF HOUSE REFUSE.

The Local Government Board having sanctioned a loan for the purpose, the erection of a Refuse Destructor will commence almost immediately. It will be of the type known as the Manlove-Elliott, and the refuse will all be handled by mechanical means. The proposed site is on the Sewage Farm, a short distance to the East of the present Pumping Station. As the works will take a considerable time to construct, I would suggest that the question of reorganizing the collection of house refuse should be thoroughly considered. At present the collection is made twice a week from houses in the centre of the town, and once a week from other parts. The refuse from the poorer quarters should be collected more frequently, especially in hot weather. At present, heavy horse-drawn waggons have to make their way down every street; it should surely be possible to adopt a system such as is used in some towns, in which lighter vehicles would be used as collectors for the heavier carts. This would probably involve the use of special dust bins of uniform, standard sizes, instead of the insanitary makeshifts on which I reported last year.

The question of horse manure requires special consideration. No Bye-Laws exist to regulate the removal of stable refuse; it may be kept for any length of time, and be removed at any hour. Complaints are not seldom received as to nuisances arising from manure; they are generally well founded. These collections are not merely unpleasant, owing to the strong ammoniacal odours that arise from them, but may also be dangerous as favourite breeding places for flies.

WATER SUPPLY.

Systematic bacteriological examination of the water has been carried out during the year in the Laboratory, and has shown that the supply to the town is of a high degree of purity. Monthly samples for Chemical Analysis have been forwarded to the Borough Analyst, and have afforded confirmatory evidence.

A Local Government Board Enquiry, by L. M. Crosthwaite, Esq., M.I.C.E., and F. W. Darra-Mair, Esq., M.D., on the Water Supply of the town, was held at the Town Hall on July 15th. I attended to give evidence on behalf of your Corporation.

On October 12th, the Inspectors again visited the town for the purpose of carrying out certain experiments in connection with a pit on the property of the Rev. W. P. Beckett, adjoining the Pumping Station. The necessary arrangements were made by the Borough Engineer, Mr. N. Greenshields, and myself. As the Inspectors have not yet issued their Report, it would be improper here to make any further reference to the matter.

I am glad to say that your Corporation have now acquired the Hoo Farm, and the necessary alterations are being carried out by the Waterworks Committee, to improve the surroundings of the Works.

COMMON LODGING HOUSES.

Since my last report the beer licence of a lodging house has been terminated by the Magistrates. The house is now used solely as a lodging house. This is a great advance, and forms a precedent worthy of imitation. The houses have been well conducted during the year. There has been a notable increase in the number of women stopping in the lodging-houses open to them during the past year. No reason is known locally for this fact.

MEAT INSPECTION, DISEASE IN MEAT, AND CONDITION OF SLAUGHTER HOUSES.

Meat inspection is conducted by the Meat Inspector, Mr. E. T. Fell, who holds the Special Certificate for Meat Inspection of the Royal Sanitary Institute. The Inspector has paid 2,043 visits to slaughter houses during the year, and I have on several occasions also inspected all the premises with him. The Inspector is provided with a bicycle by the Authority in order to facilitate his work.

In my Report last year I stated that—"In any application that may be made for Parliamentary powers, authority to erect a Municipal Slaughter House, and, if possible, to prohibit the use of private slaughter houses in the Borough, should be one of the main objects sought." To this opinion I strongly adhere. "In Bedford there are 8 registered, and 22 licensed slaughter houses. They are mostly situated in the old part of the town, and this fact involves the necessity of driving beasts through some of the narrowest and most crowded streets. Of the 30 slaughter houses, all but one are within 100 feet of dwelling houses; in 21 cases the shop and the slaughter house are within the same curtilage. It must be remembered that a slaughter house includes a fasting lairage for the animals; and that amongst the inconveniences caused to the neighbours must be reckoned that of noise from the beasts." (Report M.O.H., 1908).

The premises I have found on inspection to be generally well kept, but many, indeed nearly all of them, are ill-suited for their purpose, being cramped and ill-lighted, and incapable of attaining the standard of cleanliness of public abattoirs. One minor (if it be a minor) objection to many of these slaughter houses is, that, as Mr. Fell reports, it is almost impossible to keep boys from getting access to the yards whilst slaughtering is going on.

As far as possible the Inspector is present at the time of slaughtering, but it is impossible for him always to be present, owing

to the number and scattered position of the premises. The greater facility for inspection in public abattoirs is one of the great points in their favour.

The following is a summary of the work of the Inspector:—

No. of visits to slaughter houses	2043
No. of carcasses inspected—Beasts	996
" " Sheep	1651
" " Pigs	1348
Total No. of carcasses inspected	3995

In 11 cases the Inspector was voluntarily asked by dealers to inspect meat delivered to them for sale. In 6 of these cases the meat was unfit for food, and was destroyed. The following table shows the number of cases in which carcasses, or portions thereof, were condemned:—

Description	Reason for Seizure.	Weight.
1 Carcase (Bovine), Generalised Tuberculosis		420 lbs.
3 parts of Carcases (Bovine), Localized Tuberculosis		281 "
4 Pigs, Tuberculosis		555 "
1 Pig, Suffocation		143 "
4 Sheep, Unfit for Food		237 "
3 Parts of Carcases (Bovine), Injury during Life		178 "
Total weight of Meat Seized		1814 lbs.

The diseased meat was destroyed in every case, on the order of a Magistrate, under Sects. 116—169, Public Health Act, 1875.

In addition, 3 boxes of dried haddocks, 3 boxes of apples (84 lbs.), and 1 basket of peaches (24 lbs.), were seized and condemned.

In two instances, proceedings were taken against persons for depositing unsound meat intended for the use of man; in one case a conviction was obtained, and the offender was fined £10 and £14/13/6 costs; the other case was dismissed. In this latter the proceedings were taken because the carcase was tubercular.

MILK SUPPLY.

The Inspector has forwarded during the year 94 samples of Milk for analysis; 86 of which proved to be genuine; one sample contained boracic acid, and 7 were slightly deficient in fat.

The Milkshops, 22 in number, have been kept in good order; there are, in addition, 27 purveyors of milk residing in the Borough without shops, whose premises I have visited from time to time. In addition, there are 13 persons who vend milk, but do not reside in the Borough. One purveyor of milk, living outside the Borough, and who would not register when warned, was prosecuted, and fined five shillings and eight shillings costs. There are now only two cowsheds within the Borough; the cows are only brought into the sheds for milking. The buildings are not up to date.

Full particulars as to the samples of articles of food are contained in the Report of the Inspector. Two dealers were prosecuted for selling margarine as butter, and convicted. In a case where a vendor was prosecuted for selling whiskey under proof the Magistrates dismissed the case, but ordered the defendant to pay £3 10s. costs.

FACTORIES AND WORKSHOPS.

I have, with the Sanitary Inspector, paid visits to the Factories and Workshops during the year. They are generally in a good condition, and no serious complaint has arisen. Improvements in sanitary arrangements have in some instances been suggested, and these have mostly been carried out. As before, most of the defects have arisen from want of cleanliness. With the exception of a small tripe boiling establishment (which is well conducted), there are no "offensive trades" in the town. The bakehouses are 56 in number, and are none of them underground; they are in a cleanly state. The Home Workers are chiefly tailors and dressmakers; the chief defects in the houses have been due to want of cleanliness. No infectious cases have occurred amongst them.

Annual Report of the Medical Officer of Health for the year 1909 for the Borough of Bedford on the administration of the Factory and Workshop Act, 1901, in connection with

FACTORIES, WORKSHOPS, LAUNDRIES, WORKPLACES AND HOMEWORK.

1.—INSPECTION.

INCLUDING INSPECTIONS MADE BY SANITARY INSPECTORS OR INSPECTORS OF NUISANCES.

PREMISES.	NUMBER OF		
	Inspections.	Written Notices.	Prosecutions.
Factories (Including Factory Laundries).	64	8	....
Workshops (Including Workshop Laundries.)	270	50	....
Workplaces (Other than Outworkers' premises included in Part 3 of this Report.	89	20	....
Total	423	78	....

2—DEFECTS FOUND.

PARTICULARS.	NUMBER OF DEFECTS			Number of Prosecutions.
	Found.	Remedied.	Referred to H.M. Inspector.	
<i>Nuisances under the Public Health Acts:</i>				
Want of cleanliness	51	51		
Want of ventilation	2	2		
Overcrowding	1	1		
Want of drainage of floors	1	1		
Other nuisances	20	20		
Sanitary accommodation:—				
Insufficient .. .. .	..	..
Unsuitable or defective .	4	4		
Not separate for sexes ..	1	1		
<i>Offences under the Factory and Workshop Act:—</i>				
Illegal occupation of underground bakehouse (s. 101)	..	..
Breach of special sanitary requirements for bakehouses (ss. 97 to 100) ..	..	..
Other offences .. .. .	..	..
(Excluding offences relating to outwork which are included in Part 3 of this report.)				
Total	80	80	..	..

NATURE OF WORK.	OUTWORKERS' LISTS, SECTION 107.										OUTWORK IN UN- WHOLESOME PRE- MISES, SECTION 108.				OUTWORK IN IN- FECTED PREMISES, SECTIONS 109-110.			
	Lists received from Employers.					Prosecutions.					Number of Inspections of Outworkers of premises.	Instances.	Notices served.	Prosecutions.	Instances.	Orders made (S. 110).	Prosecutions (Sections 109, 110).	
	Twice in the year.		Once in the year.			Failing to keep or permit inspection of lists.	Failing to send lists.	Numbers of Addresses of Outworkers rec'd from other Councils.	Numbers of Addresses of Outworkers forw'd to other Councils.									
	Lists.	Con- tractors.	Outworkers.	Workmen.	Lists.					Con- tractors.								Outworkers.	Workmen.
Wearing Apparel— (1) making, &c. (2) cleaning and washing Lace, lace curtains & nets Artificial flowers . . . Nets, other than wire nets Tents Sacks Furniture and Upholstery Fur pulling Feather sorting Umbrellas, &c. Carding, &c. of buttons, &c. Paper Bags and Boxes . . Basket making Brush making Racquet and tennis balls Stuffed Toys File making Electro-Plate Cables and Chains . . . Anchors and Grapnels . . Cart Gear Locks, Latches and Keys Pea picking	24 4 .																	

4.—REGISTERED WORKSHOPS.

5.—OTHER MATTERS.

4.—REGISTERED WORKSHOPS.				5.—OTHER MATTERS.	
Workshops on the Register (s. 131) at the end of the year.				Class.	Number.
Factories	..	..	..	Matters notified to H.M. Inspector of Factories:—	
Workshop Bakehouses	..	..	..	Failure to affix Abstract of the Factory and Workshop Act (s. 133)	1
Other Workshops	..	..	..	Action taken in matters referred by H.M. Inspector as remediable under the Public Health Acts, but not under the Factory and Workshop Act (s. 5)	..
Domestic Workshops	..	..	..	Reports (of action taken) sent to H.M. Inspector	
Work Places	..	..	..
Total number of workshops on Register				Other	9
				Underground Bakehouses (s. 101):—	
				Certificates granted during the year	2
				In use at the end of the year	2

Dated 31st December, 1909.

F. B. WILLMER PHILLIPS,
Medical Officer of Health.

SCHOOLS.

There was an extensive outbreak of measles in the Elementary Schools of the town after the summer holidays. Nor was the disease confined to this class of school, there having been a large number of cases in the Secondary Schools earlier in the year. In the absence of notification for this disease it is only possible to speak in general terms. The absences of any children from infectious diseases are reported daily through the Education Officer. I paid numerous visits to the various schools, and examined the children for suspected cases. The closets attached to the various Elementary Schools of the town are of the trough variety. This is a very bad system, for it accustoms children to the idea of allowing natural filth to accumulate, even if only for short periods. Further, the children are not trained to the use of a flushing apparatus. Only those who have practical knowledge of the subject know how imperfectly the sense of decency in such matters is developed among the mass of the population. From its earliest years the child should be trained to a sense of the value of cleanliness, and to disgust for insanitary filth. The lesson should begin and be thoroughly learned in the School. The subject is one that deserves the earnest consideration of all sanitary and educational authorities.

INFECTIOUS DISEASES.

There were 10 more cases of Scarlet Fever, and 24 cases fewer of Diphtheria last year than in the year before. There were 4 deaths from Diphtheria, but none from Scarlet Fever. The zymotic death rate, which comprises deaths from Small Pox, Measles, Scarlet Fever, Diphtheria, Whooping Cough, Enteric Fever, and Diarrhoea, was 0·45 per 1,000 living. The deaths from Diphtheria all occurred at ages under 15, but only one of them under 5 years. Seven cases under 5, years of age, and 26 between 5 and 15 years, were notified; there were 8 cases above 15 years of age.

Two cases of Enteric Fever were reported. For the first no convincing cause was discovered; the second patient had relations in a neighbouring village, amongst whom the disease occurred, and from whom she in all probability contracted it. The attack was of a very severe type, and the patient unfortunately succumbed.

SHEWING THE MONTHLY NUMBER OF CASES.

1909.

	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Totals
Scarlet Fever	7	11	14	12	2	5	—	2	3	5	4	10	75
Diphtheria	3	4	2	5	4	1	1	2	5	2	3	8	40

The following cases may be cited, in which the source of infection could be more or less traced:—

F. K.—Scarlet Fever. His son had been treated at home, and certified as free from infection three weeks previously.

Jan. 30th, L. S.—A friend of S., who went to Hospital with Scarlet Fever on January 22nd.

Feb. 1st, L. and S. S.—Children of above; Scarlet Fever. Diphtheria: A school mistress and two pupils certified on the same day.

E. S.—Scarlet Fever, Feb. 20th. E. M., ditto, Feb. 23rd; had been in same class.

G.P.—Domestic servant; Scarlet Fever. Her sister, from a neighbouring village, had been removed to Rural District Hospital two days previously. G.P. had been home 10 days before notification.

Mrs. M.—Scarlet Fever; certified four days after her child, E. M. This case illustrates the way in which a school may act as a centre of infection.

A. T., Mr. A., Mrs. A., with their child G. A.—All certified on one day as having Scarlet Fever. G. A. had had a rash three weeks before, of which no notice was taken. A. T. had visited the house of the A's. A brother, R. T., of A. T., who had been on a visit to Bedford, also visited the A's, and on his return to London was certified as having Scarlet Fever. Four days after the A's had been certified, R. S., servant at the same house, was certified.

M. G. L. had been in same class as E. S. and E. M. (*vide supra*). Certified on March 3rd as having Scarlet Fever.

J. C.—Scarlet Fever; had sat next to the last case in class. Certified, March 6th.

R. F.—In same class as last case; certified (Scarlet Fever), March 10th.

F. R.—Certified March 16th (Scarlet Fever). His father had returned from Hospital 14 days previously.

C. O., tailor.—Scarlet Fever. Work sent to a youth who lived in the country, and whose brother had Scarlet Fever, and was taken to Hospital.

L. T.—Scarlet Fever. Grandchild had been kept at home for same complaint; six weeks later another case in same house.

H. W.—Diphtheria. Discovered in school, whilst children were being examined for suspected measles.

H. B.—Diphtheria; nine days after this case a children's nurse in the same house developed Diphtheria, and went to Hospital. It was then remembered that a child, M.G.B., had had a transient sore throat and febrile symptoms to which no importance had been attached. A throat swab was taken from the child, and the Diphtheria bacillus found. No source of infection was traceable, but as the father of the child had had severe nasal catarrh some days before the child's attack, a swab from his nose was examined, and found to contain the Diphtheria bacillus.

List of Milk Dealers (represented by numbers) supplying milk to houses where cases of Infectious Diseases occurred in 1909.

Dealers.	Houses Supplied.						Total.
	Scarlet Fever.			Diphtheria.			
1	..	0	..	..	1	..	1
2	..	2	..	..	0	..	2
3	..	2	..	..	0	..	2
4	..	2	..	..	0	..	2
5	..	1	..	..	1	..	2
6	..	1	..	..	2	..	3
7	..	2	..	..	3	..	5
8	..	5	..	..	5	..	10
9	..	0	..	..	1	..	1
10	..	3	..	..	0	..	3
11	..	1	..	..	2	..	3
12	..	2	..	..	0	..	2
13	..	8	..	..	1	..	9
14	..	2	..	..	1	..	3
15	..	6	..	..	2	..	8
16	..	2	..	..	0	..	2
17	..	2	..	..	0	..	2
18	..	3	..	..	4	..	7
19	..	2	..	..	0	..	2
20	..	2	..	..	0	..	2
21	..	2	..	..	1	..	3
22	..	2	..	..	2	..	4
23	..	1	..	..	1	..	2
24	..	1	..	..	0	..	1
25	..	0	..	..	1	..	1
26	..	1	..	..	0	..	1
27	..	2	..	..	0	..	2
28	..	0	..	..	1	..	1
29	..	1	..	..	0	..	1
30	..	1	..	..	0	..	1
31	..	2	..	..	0	..	2
32	..	1	..	..	0	..	1
33	..	1	..	..	0	..	1
34	..	0	..	..	2	..	2
35	..	1	..	..	0	..	1
36	..	0	..	..	1	..	1
37	..	1	..	..	0	..	1
Condensed Milk.	..	2	..	..	3	..	5
Totals. ..	67			35			102

NOTE.—Cases in Public Institutions are not included.

POPULATION.

The estimated population of the Borough on June 30th, 1909, was 42,362. These figures are, in all probability, in excess of the true ones. As next year (1911) will be a census year, it will then be possible to ascertain the errors in the estimates of population for each year since the last census. The population of the town is, to a considerable extent, a shifting one, as families settle for a few years for the sake of its educational advantages, and then leave, making room for fresh comers. There is also a considerable artizan population connected with the various factories, which is also subject to fluctuation. The population in 1911, ascertained by actual enumeration, when compared with that at the census of 1901, will show whether the rate of growth has varied, and, if so, how much, from the same rate in the period 1891--1901. Between 1871 and 1881 the population of the Borough increased (in round numbers) 16 per cent.; between 1881 and 1891 the rate of increase rose to 43 per cent., and between 1891 and 1901 dropped to 25 per cent. The rate will probably be found to be about the same for the period 1901 to 1911. The large increase of population in the 10 years between 1881 and 1891 was undoubtedly due to the influx of new residents caused by the remodelling of the Harpur Trust Schools. No similar increase is to be expected in the future, but the town has continued to grow from the natural increase of population, from its attraction as a residential centre, and from the development of new industrial undertakings. There seems no reason why these causes should not continue to operate, though possibly in a less degree, and a steady augmentation of population may therefore be expected in the future. This point is one that has always to be kept in mind in considering the sanitary requirements of the town.

Mr. Craddock, the Rate Collector, has again kindly furnished me with an estimate of the population of the Borough made from the number of inhabited houses. This serves as a useful check on the estimate derived from the other method, and the result is probably nearer the actual truth.

Estimated No. of houses in Borough, June 30th, 1908	8,956
Estimated No. of houses built during year ending June 30th, 1909	195
Estimated No. of houses in Borough, June 30th, 1909	9,151
Estimated No. of empty houses, June 30th, 1909	278
Estimated No. of inhabited houses, June 30th, 1909	8,873
Average occupiers per house, as per last census	4 $\frac{5}{7}$
Estimated population, June 30th, 1909	41,830

BIRTH RATE.

The number of births during the year 1909 was 717.

Boys: Legitimate	351	Illegitimate	19—Total 370.
Girls: Legitimate	328	Illegitimate	19—Total 347.
Legitimate Births		679	
Illegitimate Births		38	

The percentage of illegitimate births to the total number of births was 5·3; the number per 1,000 of population was 0·89. The births per 1,000 of population were 16·92, as compared with an average of 19·20 for the preceding 10 years. Ten years ago the birth rate was 21 per 1,000 of population, and it has fallen steadily every year. This decline is general throughout the country, and is the index to a great national peril. The fall in the birth rate is most marked in the better, and least marked in the worst strata of the population; the proportion of the less desirable is tending to increase, that of the better to decrease. The nation has, it is to be feared, entered on the fatal course of "race suicide," along which the French people have advanced so far.

DEATH RATE.

The total number of deaths registered in the Borough was 459. This total, when corrected by the deduction of the deaths of non-residents in Public Institutions within the Borough, and the addition of those of residents in Public Institutions outside the Borough, gives a nett total of 429, which is equivalent to a death rate of 10·13 per 1,000 of population. This is only very slightly above the rate for last year, 9·9, which was the lowest on record. The death rate just given is known as the "crude death-rate," and though affording a valuable measure of the health of the same locality from year to year, is not a sufficient guide for judging of the health of the town in comparison with other places. The populations of different towns and districts vary greatly in the relative proportions of the "age-groups," of which they are composed. For statistical purposes the population living at any time is divided into groups as follows: Under 5 years; 5 to 10 years; 10—15 years; 15—20 years; 20—25 years; 25—35 years; 35—45 years; 45—55 years; 55—65 years; 65—75 years; 75—85 years; 85 years and upwards. These groups may again be each subdivided into Male and Female. Now, as the rate of mortality varies greatly among the groups, being highest at the two extremes, it is clear that the total number of deaths in a given place will depend largely upon the number of individuals in the several age groups, quite independently of the local health conditions of the place itself. The number of persons of each sex in each "age-group" living in a given place is ascertained at each census. If the death-rates for each age-group for the whole country be supposed to hold for the corresponding group of the particular place, the general death rate for the place, calculated on this supposition is called the Standard Death Rate. The numerical factor by which this last rate must be multiplied in order to equal the rate for the whole country, is called the Factor for Correction.

By multiplying the crude death rate of any town by the Factor for Correction, we obtain the Corrected Death Rate. This is the death rate which would have obtained had the composition of the population been identical, as to age and sex distribution, with the whole population of England and Wales.

The corrected Death Rate, therefore, supplies a means of comparing the mortality of different places, when the influence of sex and age distribution has been eliminated. As it is a matter of great interest to see how far the mortality of Bedford is affected by sex and age distribution, I have calculated the Factor for Correction, and find it is 1.056. The crude death rate for the year 1909, when multiplied by this factor, gives 10.7 as the Corrected Death Rate.

Thus, the low death rate of the town is not due to a favourable sex and age distribution so much as to its natural conditions, and Bedford may justly claim to be a very healthy town.

INFANTILE MORTALITY.

There were 59 deaths of infants under one year of age. This is equivalent to a rate of 83.7 deaths per 1,000 births registered, and is the lowest infantile mortality rate recorded in the Borough. As was the case in the two preceding years, the cool and wet summer was no doubt the main reason for this satisfactory result, only 6 deaths in all being due to Diarrhoeal Diseases in infants. 20 deaths of infants were attributed to Premature Birth; the causes of these are to be sought in the unfavourable conditions affecting the mothers before the birth of the infants. Ten deaths were certified as due to Atrophy, Debility, or Marasmus, and 7 to Convulsions. None were returned as due to Syphilis or Rickets; the two latter diseases do not always receive their due meed of blame, and their ill deeds are concealed by and attributed to their symptoms. 17 deaths occurred between 1 and 5 years of age. Of the 59 infantile deaths, 26, or nearly one-half, occurred within the first month of life.

The question of the adoption of the Notification of Births Act was submitted by me to your Public Health Committee, which, after due consideration, decided that it was not at present, at any rate, advisable to adopt the Act.

The Borough Surveyor, Mr. Greenshields, has kindly furnished the subjoined table shewing the Monthly Rainfall:—

1908.

1909.

Month.	Total Depth.	Greatest fall in 24 hours.		Number of Days with 'or or unrecorded	Total Depth.	Greatest Fall in 24 hours.		Number of Days with 'or or unrecorded
	Inches.	Inches.	Date.		Inches.	Inches.	Date.	
JAN.	1.09	0.68	7	13	0.75	0.14	7	17
FEB.	0.80	0.17	16	15	0.34	0.10	27	10
MAR.	2.57	0.83	25	23	1.89	0.32	30	22
APRIL	2.75	0.47	23	20	1.86	0.77	19	12
MAY	1.31	0.31	13	13	1.65	0.70	24	10
JUNE	0.91	0.36	1	8	3.36	0.77	1	17
JULY	2.53	0.54	9	14	2.72	0.57	27	17
AUG.	2.30	0.57	31	14	1.97	0.70	1	14
SEPT.	1.02	0.31	15	15	2.79	0.65	17	22
OCT.	1.65	0.66	16	16	3.07	0.49	26	25
NOV.	0.70	0.10	11	17	0.50	0.23	29	13
DEC.	1.30	0.25	14	21	2.61	0.50	2	20
TOTAL	18.93	—	—	189	23.51	—	—	199

VACCINATION.

Owing to the fact that the areas for Registration and for Sanitary Administration, are not coincident, it has been impossible to obtain the exact figures as to Vaccination in the Borough. The Vaccination Officer, Mr. S. Chitham, has kindly supplied me with the following information. In the two Registration Districts within which the Borough is included, there were, in 1908, 1,078 births registered. Of these infants 376 were certified by 31st January, 1910 as successfully vaccinated; 5, as insusceptible of vaccination; 61 died unvaccinated: in 51 cases, vaccination was postponed on medical certificate; 37 were removed to other districts; 12 were unaccounted for, and in 546 cases statutory declaration of objection was made. The number of births registered in Bedford in 1908 was 702. It will be safe to assume that the proportion of unvaccinated infants in the town is at least equal to that of the whole district. On this supposition, 365 unvaccinated infants were added to the population in a single year.

TUBERCULOSIS.

On the first day of the year there came into force an important set of Regulations as to Tuberculosis, issued by authority of the Local Government Board; they relate to those persons under the care of the Poor Law Authorities, who may be suffering from Pulmonary Tuberculosis, commonly known as Consumption. By these Regulations the duty is thrown upon the Medical Officers of Poor Law Institutions and of Poor Law Districts, of notifying to the Medical Officer of Health the existence of any cases of the disease which may come under their notice among the "poor persons" receiving Poor Law relief. In the case of "a poor person" leaving a Poor Law Institution, or changing his domicile from one district to another, the Superintending Officer of the Institution or the Relieving Officer, as the case may be, is to notify the intended change of residence to the Medical Officer of the District to which such poor person is, or is believed to be, proceeding. Certain small fees are payable for this notification by the Councils of the areas for which the Medical Officers of Health to whom any notifications may be sent, act.

Subject to certain restrictions, powers are conferred upon any Council, on the advice of their Medical Officer of Health, in the case of a poor person in respect to whom a notification has been received, to—

(i) Take all such measures, or do all such things as are authorized, in any case of infectious disease, by any enactment relating to public health, and as have reference to the destruction and disinfection of infected articles, or the cleansing and disinfecting of premises;

(ii) Take all such measures, or do all such things, as are appropriate and necessary for the safe disposal or destruction of infectious material, produced and discharged as a result of Pulmonary Tuberculosis; and otherwise for the prevention of the spread of infection from any such material.

(iii) Afford or supply all such assistance, facilities or articles, as, within such reasonable limits as the circumstances of the case require and allow, will obviate or remove or diminish the risk of infection arising from the conditions affecting the use or occupation of any room, when used or occupied by the poor person as a sleeping apartment; and

(iv) Furnish for the use of the poor person, on loan, or otherwise, any appliance, apparatus, or utensil which will be of assistance for the purpose of any precaution against the spread of infection.

Further, the Council, on the advice of their Medical Officer of Health, may provide and publish or distribute, in the form of placards, handbills, or leaflets, suitable summaries of information and instruction respecting Pulmonary Tuberculosis, and the precautions to be taken against the spread of infection from that disease.

The increased powers thus placed in the hands of your Authority will, when further information has accumulated through the system of notification, no doubt prove of the greatest assistance in dealing with this disease.

A Memorandum by the Medical Officer of the Local Government Board was subsequently issued dealing in more detail with the Administrative Measures against Tuberculosis.

Under the Regulation, 21 notices were received during the past year, as follows:—

Notice of admission to Workhouse	12
Notice of cases in district	4
Notices of change of domicile	5
	<hr/>
	21

Of the admissions to the Workhouse, 6, *i.e.*, one-half, came from the Common Lodging Houses.

On the receipt of a notice, a visit has been at once paid by the Sanitary Inspector and myself to the house where the patient was or had been residing. Disinfectants have been supplied, and in suitable cases spitting flasks for the use of the patients.

It is, and has been for some time past the practice of your Authority to offer disinfection in any house where a case of fatal Tuberculosis has occurred. The offer is generally accepted.

The County Hospital provides facilities for the treatment of suitable cases of the disease.

LABORATORY.

The work has been carried out on the same lines as last year. Weekly examinations (with few intermissions) have been made by me of samples of water from the Rising Main; the Battery of Pressure Filters; the Two Sprinkler Filters; the old Rectangular Filters; and the Service Reservoir. A table of the results is appended to this Report.

During the year 116 cultures were made and examined from "Throat Swabs," for the detection of the micro-organism of Diphtheria. The majority of these examinations were made for the purpose of deciding whether patients were fit for discharge from Hospital. As was pointed out in last year's Report, the average period of detention in Hospital has been considerably prolonged, as the organism generally persists in the throat and air passages for some time after the patient is apparently well. In several cases of suspected Diphtheria culture tubes have been supplied to and examined for medical practitioners who have applied for them.

ISOLATION HOSPITAL.

The number of patients admitted during the year was 85, viz., Diphtheria, 23; Scarlet Fever, 62.

The Matron, Miss Bartlett, resigned on January 17th, 1909, and her post was filled by the re-appointment of Miss Cubitt.

On July 27th, the Borough Surveyor and myself attended at the Local Government Board, Whitehall, respecting the requirements of the Board as to fencing the Hospital grounds. A modification of the Board's demands was acceded to, and the approved plan will shortly be carried out. This could not be done till the purchase of the land had been formally completed.

I advise that arrangements should be made as soon as possible for extending the water and electricity mains to the Hospital. This would greatly diminish the risk of fire, an ever present anxiety at present. Your Committee some time ago approved of the erection of a separate block for patients convalescent from Diphtheria; now that the ground on which the Hospital stands has become the property of the Authority, it is to be hoped that this extension may be carried out. Its advantages would no doubt compensate for the cost, which may be put roughly at £500.

STATUTE FAIR.

I regret that the application made by your Council for the abolition of the Statute Fair was not acceded to by the Home Secretary.

BOROUGH NURSE.

I again take the opportunity of advising the appointment of a Borough Nurse, to assist in carrying out the work of the Health Department. If a Nurse were appointed to assist in the Medical Examination of School Children, and to carry out certain duties of the Health Department, for instance, visiting houses whence dirty and neglected children come to school, there would be plenty of work to occupy the whole of her time.

In conclusion, I wish to express my thanks for the valuable assistance I have received from the Town Clerk and the Borough Surveyor, and my colleagues, Mr. Merrie, and Mr. Fell, during the past year.

I remain, Gentlemen,

Your Obedient Servant.

F. B. WILLMER PHILLIPS,

M.A., M.D. (Oxon.); D.P.H. (Camb.); B.Sc. (Lond.).

March 2nd, 1910.

VITAL STATISTICS OF WHOLE DISTRICT

During 1909 and Previous Years.

Bedford Urban Sanitary Authority.

YEAR.	Popula- tion estimated to Middle of each Year.	BIRTHS.		TOTAL DEATHS REGISTERED IN THE DISTRICT.				Total Deaths in Public Institu- tions in the District.	Deaths of Non- residents register'd in Public Institu- tions in the District.	Deaths of residents register'd in Public Institu- tions beyond the District.	Nett Deaths at all Ages belonging to the District.	
				Under 1 year of age		At all ages.					Number.	Rate.*
		Number	Rate.*	Number.	Rate per 1000 Births register'd	Number.	Rate.*					
1	2	3	4	5	6	7	8	9	10	11	12	13
1899	35,440	753	21'0	111	147	441	12'44	84	45	6	405	11'47
1900	36,715	749	20'4	97	129	451	12'28	78	26	0	424	11'27
1901	35,144	767	21'7	93	121	483	13'7	103	50	3	436	12'4
1902	36,526	735	20'12	79	108	401	10'95	86	41	20	380	10'4
1903	37,100	711	19'2	83	117	434	11'69	101	50	14	398	10'72
1904	38,152	732	18'9	90	124	512	13'4	105	54	15	473	12'4
1905	38,900	668	17'2	62	91'3	447	11'5	112	40	9	416	10'7
1906	39,580	744	18'79	87	116'9	488	12'3	115	42	13	459	11'59
1907	40,486	718	17'73	84	116'9	513	12'6	106	42	6	477	11'78
1908	41,414 +	702	16'95	68	96'8	448	10'82	97	41	4	411	9'92
Averages for years 1899-1908	37,946	728	19'20	85	116'8	462	12'17	99	43	8	428	11'27
1909	42,362	717	16'92	60	83'7	459	10'84	104	44	14	429	10'13

* Rates in columns 4, 8, calculated per 1,000 of estimated gross population.

† This figure was by mistake given as 41,128 in last year's report.

NOTE.—The deaths to be included in column 7 of this Table are the whole of those registered during the year as having actually occurred within the district or division. The deaths to be included in column 12 are the number in column 7, corrected by the subtraction of the number in column 10 and the addition of the number in column 11.

By the term "Non-residents" is meant persons brought into the district on account of sickness or infirmity, and dying in public institutions there; and by the term "Residents" is meant persons who have been taken out of the district on account of sickness or infirmity, and have died in public institutions elsewhere.

Area of District in acres (exclusive of area covered by water) 2,200 acres.

Total population of all ages ..	35,144	} At Census of 1901.
Number of inhabited houses ..	7,341	
Average number of persons per house	4'79	

List of Public Institutions in the District:—

Bedford County Hospital.
Bedford Union Workhouse.
Bedford Borough Isolation Hospital.

CASES OF INFECTIOUS DISEASE NOTIFIED
DURING THE YEAR, 1909.
Bedford Urban Sanitary District.

NOTIFIABLE DISEASE.	CASES NOTIFIED IN WHOLE DISTRICT.							
	At all Ages.	Under 1.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and up- wards.	Total cases re- moved to Hospital.
Small-pox ..	..	..	..	..	..	..	..	..
Cholera ..	..	..	..	..	..	..	..	..
Diphtheria .. (including Mem- branous croup)	41	..	7	26	1	7	..	23
Erysipelas ..	13	..	..	..	2	12	4	..
Scarlet fever ..	75	1	16	38	10	10	..	62
Typhus fever ..	..	..	..	..	..	..	..	..
Enteric fever ..	2	..	..	..	..	2	..	1*
Relapsing fever ..	..	..	..	..	..	..	..	..
Continued fever ..	..	..	..	..	..	..	..	..
Puerperal fever ..	1	..	..	..	..	1	..	..
Plague ..	..	..	..	..	..	..	..	..
Totals	137	1	23	64	13	32	4	86

Borough Isolation Hospital, Elstow Road, Bedford.

Total Available Beds 76

Number of Diseases that can be concurrently Treated 3

*Removed to Bedford County Hospital.

CAUSES OF, AND AGES AT, DEATH

During Year 1909.

Bedford Urban Sanitary District.

CAUSES OF DEATH.	DEATHS AT THE SUBJOINED AGES OF "RESIDENTS" WHETHER OCCURRING IN OR BEYOND THE DISTRICT.							Total Deaths whether of "Residents" or "non- Residents" in Public Institutions in the District.
	All ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and up- wards.	
Small-pox .. ..	..	..	..	..	..	..	..	..
Measles	7	1	4	1	..	1	..	1
Scarlet Fever .. ..	..	..	..	..	..	..	..	..
Whooping-cough .. ..	..	..	..	..	..	..	..	..
Diphtheria, (including membranous croup) ..	4	..	1	3	..	..	..	1
Croup .. ..	..	..	..	..	..	..	..	..
Fever } Typhus .. ..	..	..	..	..	..	..	..	..
} Enteric	1	..	..	..	..	1	..	1
} Other continued	..	..	..	..	..	..	..	..
Epidemic influenza ..	7	1	..	..	..	..	6	..
Cholera .. ..	..	..	..	..	..	..	..	..
Plague .. ..	..	..	..	..	..	..	..	..
Diarrhœa	7	6	1	..	..	..	..	1
Enteritis	1	..	..	..	..	1	..	..
Gastritis .. ..	..	..	..	..	..	..	..	..
Puerperal Fever .. ..	..	..	..	..	..	..	..	..
Erysipelas	1	..	..	..	..	1	..	..
Other Septic diseases ..	2	1	1	..	..	..	..	2
Phthisis (Pulmonary Tuberculosis.)	36	..	..	..	11	23	2	6
Other Tuberculous diseases	12	1	1	3	3	3	1	5
Cancer, malignant disease	43	..	1	..	..	23	19	17
Bronchitis	27	6	3	1	..	2	15	1
Pneumonia	23	2	2	2	..	9	8	1
Pleurisy .. ..	..	..	..	..	..	..	..	..
Other diseases of Respira- tory organs	3	..	..	..	..	2	1	1
Alcoholism .. ..	..	..	..	..	..	..	..	..
Cirrhosis of liver } ..	5	..	..	..	..	4	1	1
Veneral diseases .. ..	..	..	..	..	..	..	..	..
Premature births	20	20	..	..	..	..	..	2
Diseases and accidents of parturition	1	..	..	..	..	1	..	..
Heart diseases	47	1	1	..	2	19	24	4
Accidents	6	..	..	2	3	1	..	5
Suicides	2	..	..	..	..	1	1	2
All other causes	174	20	2	2	2	46	102	53
All causes	429	59	17	14	21	138	180	104

INFANTILE MORTALITY

During the Year 1909. Deaths from stated Causes in Weeks and Months under One Year of Age, excluding "Non-Residents.*"
Borough of Bedford.

CAUSE OF DEATH.		Under 1 week.	1-2 Weeks.	2-3 Weeks.	3-4 Weeks.	Total under 1 Month.	1-2 Months.	2-3 Months.	3-4 Months.	4-5 Months.	5-6 Months.	6-7 Months.	7-8 Months.	8-9 Months.	9-10 Months.	10-11 Months.	11-12 Months.	Total Deaths under One Year.
All Causes.	Certified	15	2	3	3	23	5	6	2	5	4	2	3	..	3	1	2	56
	Uncertified	3	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	3
Common Infectious Diseases.	Small-pox .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Chicken-pox .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Measles .. .. .	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1
	Scarlet Fever .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Diphtheria (including Membranous Croup) .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diarrhœal Diseases.	Whooping Cough .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Diarrhœa, all forms .. .. .	..	..	1	..	1	..	..	..	1	1	..	..	..	1	..	..	4
	Enteritis, Muco-enteritis .. .. .	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	2
	Gastro-enteritis .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wasting Diseases.	Gastritis, Gastro-intestinal Catarrh .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Premature Birth	15	..	1	1	17	1	1	1	..	..	..	..	..	..	..	..	20
	Congenital Defects .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
	Injury at Birth .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Want of breast-milk, Starvation .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuber- culous Diseases.	Atrophy, Debility, Marasmus	2	1	..	..	3	1	2	..	1	2	1	..	..	..	..	..	10
	Tuberculous Meningitis .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Tuberculous Peritonitis .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Tabes Mesenterica .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other Causes.	Other Tuberculous Diseases .. .. .	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1
	Erysipelas .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Syphilis .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Rickets .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Meningitis .. .. .	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1
	(not Tuberculous)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Convulsions	1	1	..	..	2	..	1	..	1	..	1	..	..	1	1	..	7
	Bronchitis .. .. .	..	..	..	1	1	2	..	1	1	..	..	1	..	..	..	..	6
	Laryngitis .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other Causes.	Pneumonia .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2
	Suffocation, overlying .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Other causes .. .. .	..	..	1	1	2	..	1	..	1	..	..	..	..	..	..	..	4
		18	2	3	3	26	5	6	2	5	4	2	3	..	3	1	2	59

District of Bedford.

Deaths from all Causes at all Ages, "nett" 429.

Population (estimated to middle of 1909), 42,362.

Births in the year { Legitimate 679
Illegitimate 38

Deaths in the year of { Legitimate Infants 52
Illegitimate Infants 7

*One "Non-Resident" Infant died of Measles, aged 11-12 months.



Copies of Chemical Analyses of Samples of Town Water, 1909.

CHEMICAL LABORATORY, TOWN HALL,

ROSEBERY AVENUE, E.C.

Report upon Samples of Water forwarded for the Mayor and Corporation of the Borough of Bedford by Mr. A. W. Merrie, Town Hall, Bedford.

Sample No. 1. Taken from Service Reservoir on January 1st, 1909.

Analysis (expressed in parts per 100,000).

Chlorine	3.1	parts per 100,000.
Nitrogen as Nitrates	0.027	"
Saline Ammonia	0.0016	"
Albumenoid Ammonia	0.0118	"
Oxygen absorbed in 15 minutes ...	0.018	"
Oxygen absorbed in 1 hour	0.181	"
Alkalinity (as Calcium Carbonate)...	20.5	"
Hardness—Total	34.0	"
,, Permanent	11.0	"
,, Temporary	23.0	"
Total Solid Matter	55.0	"
Calcium Sulphate	9.7	"
Sodium Sulphate	6.5	"

The sample was clear and had no smell. A microscopic examination revealed the presence of a small amount of mineral matter and vegetable debris.

Opinion.

The analysis indicates some organic improvement on the last sample.

(Signed)

J. KEAR COLWELL.

Sample No. 2. Taken from Service Reservoir, on January 26th, 1909.

Analysis (expressed in parts per 100,000).

Chlorine	3.0	parts per 100,000.
Nitrogen as Nitrates	0.083	"
Saline Ammonia	0.0034	"
Albumenoid Ammonia	0.0060	"
Oxygen absorbed in 15 minutes ...	0.034	"
Oxygen absorbed in 1 hour	0.305	"
Hardness—Total	33.5	"
,, Permanent	11.8	"
,, Temporary	20.7	"
Alkalinity (as Calcium Carbonate)...	25.0	"
Total Solid Matter	52.0	"
Calcium Sulphate	9.7	"
Sodium Sulphate	3.7	"

The sample was clear and had no smell. A microscopic examination revealed the presence of a number of pieces of vegetable debris and some mineral matter.

Opinion.

The sample exhibits some deviation from the normal in the increase in the quantity of Nitrogen as Nitrates. The Albumenoid Ammonia is lower than last month, but the Oxygen absorbed is considerably higher.

(Signed)

J. KEAR COLWELL.

Sample No. 3. Taken from Service Reservoir on 22nd Reservoir, on 22nd February, 1909.

Analysis (expressed in parts per 100,000).

Chlorine	2.9	parts per 100,000.
Nitrogen as Nitrates	0.065	"
Saline Ammonia	0.0008	"
Albumenoid Ammonia	0.0070	"
Oxygen absorbed in 15 minutes ...	0.052	"
Oxygen absorbed in 1 hour	0.322	"
Alkalinity (as Calcium Carbonate)...	24.5	"
Hardness—Total	34.0	"
,, Permanent	12.0	"
,, Temporary	22.0	"
Total Solid Matter	53.5	"
Calcium Sulphate	9.9	"
Sodium Sulphate	4.8	"

The sample was clear, and had no smell. A microscopic examination revealed the presence of a few fragments of vegetable matter.

Opinion.

The results obtained are very similar to those given by the previous sample.

(Signed)

J. KEAR COLWELL.

Sample No. 4. Town Water, taken from Service Reservoir, on 23rd March, 1909.

Analysis (expressed in parts per 100,000).

Chlorine	3.0	parts per 100,000.
Nitrogen as Nitrates	0.060	"
Saline Ammonia	0.0008	"
Albumenoid Ammonia	0.0096	"
Oxygen absorbed in 15 minutes	0.018	"
Oxygen absorbed in 1 hour	0.195	"
Alkalinity (as Calcium Carbonate)...	23.5	"
Hardness—Total	32.0	"
,, Permanent	10.0	"
,, Temporary	22.0	"
Total Solid Matter	54.0	"
Calcium Sulphate	10.4	"
Sodium Sulphate	5.1	"

The sample was clear and had no smell. A microscopic examination revealed the presence of a few fragments of mineral matter.

Opinion.

The water is at present in good condition. The oxygen required for the oxidation of the organic matter was considerably less than in the February sample.

(Signed)

J. KEAR COLWELL.

Sample No. 5. Town Water, taken from Service Reservoir, 21st April, 1909.

Analysis (expressed in parts per 100,000).

Chlorine	2.9	parts per 100,000.
Nitrogen as Nitrates	0.039	"
Saline Ammonia	0.0016	"
Albumenoid Ammonia	0.0128	"
Oxygen absorbed in 15 minutes ...	0.010	"
Oxygen absorbed in 1 hour	0.193	"

Alkalinity (as Calcium Carbonate)...	24.5	parts per 100,000.
Hardness—Total	33.5	”
,, Permanent	11.0	”
,, Temporary	22.5	”
Total Solid Matter	51.5	”
Calcium Sulphate	9.4	”
Sodium Sulphate	5.6	”

The sample was clear and had no smell. A microscopic examination revealed the presence of one or two fragments of vegetable debris.

Opinion.

The slightly higher Ammonia is probably due to the showery weather. The oxygen required for the oxidation of the organic matter is considerably less than last month, doubtless the result of the “cleaning out” the Reservoir has recently undergone.

(Signed)

J. KEAR COLWELL.

Sample No. 6. Town Water, taken from Service Reservoir, 20th May, 1909.

Analysis (expressed in parts per 100,000).

Chlorine	3.0	”
Nitrogen as Nitrates	0.033	”
Saline Ammonia	0.0016	”
Albumenoid Ammonia	0.0074	”
Oxygen absorbed in 15 minutes ...	0.064	”
Oxygen absorbed in 1 hour	0.304	”
Alkalinity (as Calcium Carbonate)..	23.0	”
Hardness—Total	31.5	”
,, Permanent	11.5	”
Total Solid Matter	52.5	”
Calcium Sulphate	9.4	”
Sodium Sulphate	5.3	”

The sample was clear and had no smell. A microscopic examination revealed the presence of a few fragments of vegetable debris.

Opinion.

There is a marked reduction in the Albumenoid Ammonia. In other respects the sample appears to be normal.

(Signed)

J. KEAR COLWELL.

Sample No. 7. Taken from Service Reservoir, June 18th, 1909.

Analysis (expressed in parts per 100,000).

Chlorine	3.0	parts per 100,000.
Nitrogen as Nitrates	0.038	”
Saline Ammonia	0.0002	”
Albumenoid Ammonia	0.0080	”
Oxygen absorbed in 15 minutes ...	0.025	”
Oxygen absorbed in 1 hour	0.216	”
Alkalinity (as Calcium Carbonate)..	24.5	”
Hardness—Total	32.5	”
,, Permanent	11.0	”
,, Temporary	21.5	”
Total Solid Matter	47.0	”
Calcium Sulphate	7.5	”
Sodium Sulphate	5.5	”

The sample was clear and had no smell. A microscopical examination revealed the presence of a few fragments of vegetable and mineral matter.

Opinion.

The water maintains its normal condition.

(Signed)

J. KEAR COLWELL.

Sample No. 8. Town Water, taken from Service Reservoir, 18th August, 1909.

Analysis (expressed in parts per 100,000).

Chlorine	2.9	parts per 100,000.
Nitrogen as Nitrates	0.021	,,
Saline Ammonia	0.0018	,,
Albumenoid Ammonia	0.0042	,,
Oxygen absorbed in 15 minutes ...	0.023	,,
Oxygen absorbed in 1 hour	0.259	,,
Alkalinity (as Calcium Carbonate)..	24.5	,,
Hardness—Total	32.5	,,
,, Permanent	11.0	,,
,, Temporary	21.5	,,
Total Solid Matter	48.0	,,
Calcium Sulphate	7.0	,,
Sodium Sulphate	5.7	,,

The sample was clear and had no smell. A microscopic examination revealed the presence of a few fragments of mineral matter.

Opinion.

The above analysis indicates that the water is in good condition at the present time.

(Signed)

J. KEAR COLWELL.

Sample No. 9. Town Water, taken from Service Reservoir, 22nd September, 1909.

Analysis (expressed in parts per 100,000).

Chlorine	2.8	parts per 100,000.
Nitrogen as Nitrates	0.025	,,
Saline Ammonia	0.0012	,,
Albumenoid Ammonia	0.0120	,,
Oxygen absorbed in 15 minutes ...	0.038	,,
Oxygen absorbed in 1 hour	0.272	,,
Alkalinity (as Calcium Carbonate)..	24.5	,,
Hardness—Total	32.5	,,
,, Permanent	10.0	,,
,, Temporary	22.5	,,
Total Solid Matter	49.0	,,
Calcium Sulphate	7.5	,,
Sodium Sulphate	4.7	,,

The sample was clear and had no smell. A microscopic examination revealed the presence of a few vegetable and mineral fragments.

Opinion.

The quantity of Albumenoid Ammonia has increased considerably, indicating that the water is hardly in its best condition. In other respects the results are very similar to last month.

(Signed)

J. KEAR COLWELL.

Sample No. 10. Town Water, taken from Service Reservoir, 26th October, 1909.

Analysis (expressed in parts per 100,000).

Chlorine	2.7	parts per 100,000.
Nitrogen as Nitrates	0.026	,,
Saline Ammonia	0.0006	,,
Albumenoid Ammonia	0.0116	,,
Oxygen absorbed in 15 minutes ...	0.054	,,
Oxygen absorbed in 1 hour	0.307	,,
Alkalinity (as Calcium Carbonate)..	25.5	,,
Hardness—Total	33.5	,,
,, Permanent	9.0	,,
,, Temporary	24.5	,,
Total Solid Matter	50.0	,,
Calcium Sulphate	6.3	,,
Sodium Sulphate	4.0	,,

The sample was clear and had no smell. A microscopic examination revealed the presence of a few fragments of vegetable and mineral debris.

Opinion.

As is not unusual in wet weather the oxygen absorbed is slightly high. In other respects the water appears to be normal.

(Signed)

J. KEAR COLWELL.

Sample No. 11. Town Water, taken from Service Reservoir, 2nd December, 1909.

Analysis (expressed in parts per 100,000).

Chlorine	2.8	parts per 100,000.
Nitrogen as Nitrates	0.043	,,
Saline Ammonia	0.0014	,,
Albumenoid Ammonia	0.0072	,,
Oxygen absorbed in 15 minutes ...	0.033	,,
Oxygen absorbed in 1 hour	0.270	,,
Alkalinity (as Calcium Carbonate)..	23.5	,,
Hardness—Total	34.0	,,
,, Permanent	11.0	,,
,, Temporary	23.0	,,
Total Solid Matter	50.0	,,
Calcium Sulphate	7.5	,,
Sodium Sulphate	4.2	,,

The sample was very slightly turbid, but had no smell. A microscopic examination revealed the presence of vegetable debris and mineral matter.

Opinion.

The water appears to be in good condition at the present time.

(Signed)

J. KEAR COLWELL.

BACTERIOLOGICAL ANALYSES FROM JANUARY 2nd TO DECEMBER 18th, 1909.

RISING MAIN.								BATTERY OF PRESSURE FILTERS.								NO. 6 SPRINKLING FILTER.								NO. 7 SPRINKLING FILTER.								OLD RECTANGULAR FILTERS.								SERVICE RESERVOIR.							
Date.	Gelatine.	Agar.	McConkey's Test.					Gelatine.	Agar.	McConkey's Test.					Gelatine.	Agar.	McConkey's Test.					Gelatine.	Agar.	McConkey's Test.					Gelatine.	Agar.	McConkey's Test.					Gelatine.	Agar.	McConkey's Test.									
1909.	1 c.c.	1 c.c.	100 c.c.	10 c.c.	1 c.c.	1 c.c.	101 c.c.	1 c.c.	1 c.c.	100 c.c.	10 c.c.	1 c.c.	1 c.c.	101 c.c.	1 c.c.	1 c.c.	100 c.c.	10 c.c.	1 c.c.	1 c.c.	101 c.c.	1 c.c.	1 c.c.	100 c.c.	10 c.c.	1 c.c.	1 c.c.	101 c.c.	1 c.c.	1 c.c.	100 c.c.	10 c.c.	1 c.c.	1 c.c.	101 c.c.	1 c.c.	1 c.c.	100 c.c.	10 c.c.	1 c.c.	1 c.c.	101 c.c.					
Jan. 2	759	2	+	+	+			33	Film	+	+				3	0	+						1	0	+					13	3																
" 9	3970	16	+	+	+			118	3	+	+				3	0							0	Film							5	3															
" 16	975	22	+	+				35	4	+					2	1	+						0	1						5	3																
" 23	315	17	+	+	+			19	2	+	+				1	1							1	0						5	3																
" 30	432	10	+	+				10	2	+					0	0	+						1	0						8	0																
Feb. 6	203	12	+	+	+			1	3						4	1							0	0						2	5																
" 13	213	8	+	+				10	3	+	+				0	0							1	0						1	0																
" 20	152	12	+	+				1	0	+					0	1							0	0						2	0																
" 27	72	12	+	+	+			3	7	+	+				1	0							2	1						2	0																
Mar. 6	84	8	+					2	1						0	1	+						2	0						0	0																
" 13	7163	58	+	+	+			269	16	+	+	+			0	0							1	1						5	1																
" 20	583	30	+	+	+			38	7						5	0							5	3						2	0																
" 27	759	17	+	+	+			29	17	+	+				1	2							3	2						5	1																
Apr. 3	1686	20	+	+	+			8	4	+					5	0							1	1						8	2	(+)															
" 10	620	53	+					28	3	+					3	0							3	Film						16	6																
" 17	306	22	+	+				8	2	+					2	0							0	0						26	0																
" 24	161	12	+					3	1	+					2	2							0	1						9	0																
May 1	231	14	+	+				1	3	(+)					3	1							0	Film					2	1																	
" 8	139	12	+					5	3						0	1							5	1						4	0																
" 15	426	6	+	+				5	1						4	3							8	1						5	0																
" 22	232	7	+	(+)				5	2	+					2	0							5	0						6	1																
" 29	415	5	(+)	(+)	(+)			7	2						2	3							2	0						4	0																
June 5	0	4	+					2	0						1	0							0	0						8	3																
" 12	74	3	+					3	0	+					1	0							2	3						5	3	+															
" 19	97	6	+	+				7	1	+					1	0							4	0						2	0																
" 26	3	1						2	1	+					2	0							7	0						6	0																
July 3	291	9	+	+	+			13	5	+	+				2	2	+						2	3						18	4																
" 10	5	2	+					2	2	(+)					4	2							10	2						17	5	(+)															
" 17	Liq	10	+	+	+	+		12	5	+					8	1	+						5	0						26	0	+															
" 24	215	Film	+					4	Film						5	0	+						2							9	2																
" 31	49	3	+	+				4	2	(+)	(+)				3	0							1	0						3	Film																
Sept. 4	3	0	+	+	+			3	0						5	0							8	1						2	0																
" 11	0	0						2	1	+					5	1							6	0						3	0																
" 18	21	2	+	+				4	0	+					4	0							3	0						4	1																
" 25	6	0						2	0	(+)					2	0							4	0						7	1																
Oct. 2	1	1						3	0	(+)					2	1							3	0						2	2																
" 9	4	2	+					3	1	+					2	2							4	0						1	0																
" 16	1110	11	+	+	(+)			49	7	+	+				5	1							4	1						3	Film																
" 23	1	1						2	4	+	(+)				1	0	(+)						1	1						2	0																
" 30	0	3	+	+				5	Film	+	+				2	Film	+						2	1						2	1	+	+														
Nov. 6	4	Film	+	+				12	6	(+)													10	2						4	0																
" 13	4	1	(+)					5	Film	(+)					227	3	Waste						1	0						4	0																
" 20	1	0						1	2						2	0	Waste						3	1						1	0																
" 27	4	2						9	1						3	0							6	1						4	0																
Dec. 4	3	0						33	1	+	+				5	1	+						4	1						4	0																
" 11	Liq	1	+	+				Liq	3	+					Liq	1	+						Liq	0						1	1																
" 18	6	2						3	2	(+)					21	3	+													0	1																

* NOTE.—Failure of Incubator.

+ Denotes presence of B. Coli. indicated by formation of Gas and Acid.

(+) Very slight presence of B. Coli.

Blank spaces denote absence of Bacteria and B. Coli.

F. B. WILLMER PHILLIPS, *Medical Officer of Health.*

